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LAKE CARRIERS' ASSOCIATION.

To consider and take action upon all general questions relating to the navigation and carrying business of the Great Lakes, maintain necessary shipping offices and in general to protect the common interest of Lake Carriers, and improve the character of the service rendered to the public.

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THE LARGEST SAILING SHIP AFLOAT.

To Germany belongs the distinction and honor of putting afloat the largest sailing ship ever built. The Potosi is owned by Mr. F. Laeisz, of Hamburg, and was launched from the shipyard at Geestemunde, Germany, on 8th June, 1895. Her dimensions are: Length over all, 394 feet; between perpendiculars, 365 feet. width over the plating amidships, 49 feet 9 inches; depth from upper edge of keel to under the main deck amidships, 31 feet 2½ inches. Her register tonnage is 4,027 tons gross, and 3,854 tons net; carrying capacity, 6,150 tons; displacement on an average draught of 25 feet, 8,580 tons. She is built of Siemens-Martin steel and with extra stiffening and strengthening arrangements, in view of the heavy masting and the enormous weight of her rigging.

Two steel decks run over the whole length of the vessel, the upper one being sheathed with yellow pine; and there is also another deck in the fore peak and the bridge deck, also of steel, covered with wood. The rudder consists of a frame of cast steel, into which a steel plate is riveted and the pintles inserted. Besides the large capstan for raising the anchors (the latter weighing about three tons), there are two others on the main deck, besides 13 different winches for working the sails and loading and discharging the cargo. She carries four boats, all of which are large patent iron lifeboats.

The Potosi is rigged as a five-masted barque, with double topsail and topgallant yards. The masts and yards are of steel, the height of the mainmast from keel to truck being 210 feet, and its diameter at the deck 34 inches. All the standing rigging is of galvanized iron, and the running gear of wire and hemp. The spread of canvas, with all sail set, is equal to about 5,000 square yards.

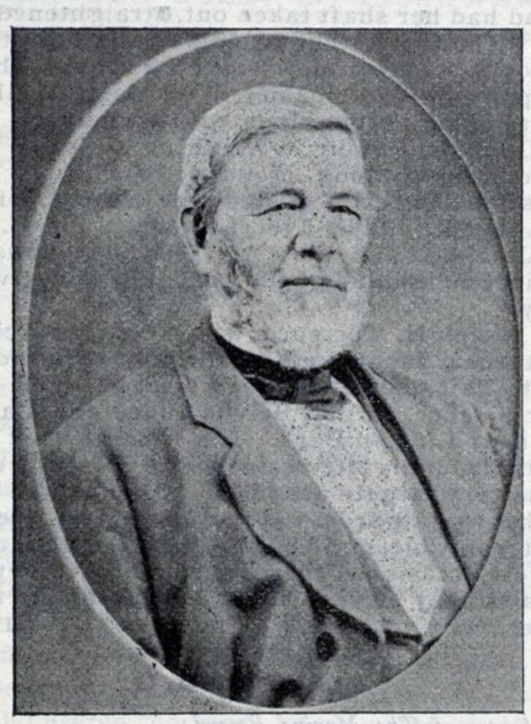
The Potosi has proved a very fast ship. After sailing from Geestemunde on July 25, 1895, she made the outward passage to Iquique, Peru, in 72 days, and the homeward trip to Hamburg in 71 days, thus taking five months and two days for the round voyage. Leaving Hamburg on March 8, 1896, for her second trip to Iquique, she left that port again on June 3, and arrived in Hamburg August 22, with a full cargo.

The firm of Joh. C. Tecklenborg, Geestemunde, is one of the largest in Germany, and is especially noted for the high quality of the workmanship and design of their vessels.

It may be mentioned that this firm has also bullt the petroleum tank steamer August Korff, belonging to the Deutsch-Amerikanische Petroleum Gesellschaft, Hamburg, which vessel measures 4,131 tons register, carries 5,700 tons deadweight, has triple-engines of 1,750 i. h. p., and is the largest German oil steamer.

OBITUARY.

Capt. Robert Howlett was born in Birmingham, England, on June 10, 1805. He sailed on the river Trent until 1830 as wheelsman and pilot on canal boats and billy boys, or canal "sloops" of 50 tons capacity, between Hull and Liverpool. In 1830 he left Hull on the barque "Diana," making the run across the ocean to New York in 21 days, the quickest time then on record. He made a few trips on the Erie canal as wheelsman on a fly boat, then he went west to Detroit and Plymouth. In 1832 he reached Grand Rapids, Mich., there being then only ten white inhabitants at the mission. He worked about a year there among the Indians. In 1834 he took up from the state 400 acres of land a few miles outside of town, paying for it in state scrip, that being the only money then in use. He converted the land into a stock farm, buying up cattle, hogs, sheep, etc.. and supplying the city with most of its meats for twenty years. In 1833 he went to Cleveland and purchased the schooner Heligoland, and in 1855 he purchased a new tug from David Bell, of Buffalo, and run her in and out



CAPT. ROBERT HOWLETT.

of Grand Haven harbor until 1862, when he traded the tug with Wm. Jones, of Black River, O., for one-half of a new vessel called the Minerva. He owned part interest in several other vessels with his son-in-law, Capt. Wm. R. Loutit, but never took any active part in marine business since 1862. He invested largely in stocks and government bonds, and has held his own with most of the business men in the states, either by water or land, and has never had a loss or a reverse in all his business experience. He died on the 24th of October, after a few hours' sickness, never having any serious illness in his life. He was a Royal Arch Mason, having contributed largely to the craft, and but very few people have contributed more liberally to poor and worthy objects in the state than he has done privately.

OFFICIAL NOTICE.

SAULT STE. MARIE, ONT., Oct. 30, 1896.

To the Editor of The Marine Record:

Several captains passing through the lock here have asked if the current report that the Canadian Sault canal was to be closed on 15th of November was true.

So far no notice has ever been taken of the slanderous tales told about this lock by interested parties from the Sault Ste. Marie, Mich., but I wish once for all to inform these parties, and the vessel men in particular, that the Canadian Sault canal will be in operation 24 hours in the day until the close of navigation notwithstanding any of their tales to the contrary.

Yours truly, J. V. BOYD, Supt.

LIQUID FUEL IN THE NAVY.

The report recently submitted to the navy department by a board of naval engineers designated about a year ago by Chief Engineer G. W. Mellville, Engineer in Chief of the Bureau of Steam Engineering, United States navy, to experiment with an invention for the purpose of using petroleum as a fuel in the naval service, states that the experiments were entirely successful. The tests of a new fuel for steam vessels are cheapness, ease of operation, economy of room, and general efficiency. The board reports favorably upon the Zerbe apparatus in respect of all these points. The evaporation was found to be 17, 18, 19, and 20 pounds of water, at various pressures, to one pound of oil, or more than double that of the best coal with the same boiler. The pressure of steam was constant, which means economy of fuel and equalization of pressure upon the machinery. There were no ashes nor dirt to injure the fine mechanism, and no stokers were required. The fuel can be put on board at sea. Other important advantages are claimed in the new device. It is said to be as safe as coal and to occupy so much less room that a vessel having a steaming radius of 1,000 miles with coal would be able to steam 2,000 miles with the same bulk of petroleum. The waste space now devoted to water ballasts forms, it is said, a perfect petroleum bunker, to be reoccupied by water as the oil is consumed. For the commercial marine, this would mean a cubic foot available for freight for every cubic foot of coal bunking space saved. The equipment of the fire-box constitutes the most important departure in the new invention. The grate bars of the ordinary furnace are utilized for the purpose of forming thereon a brick bed. This bed is composed of bricks, which have grooves partially across one face. They are laid on the grate bars at an angle of 45 degrees, thereby forming air ducts over the entire surface of the bed, and also making a corrugated surface. Instead of injecting the oil through round injectors, a fan-shaped spray is distributed over this foraminous bed, which bursts into flame on striking the bed, heating up the latter to incandescence. The air passing through the grooves and uniting with the carbonic gases generated by the contact of the oil spray with the heated brick, makes a perfect oxy-hydrogen flame. For injecting the oil and breaking it up compressed air is utilized.

REMOVAL OF BUOYS.

OFFICE OF U. S. LIGHT-HOUSE INSPECTOR,
TENTH DISTRICT,
BUFFALO, N. Y., November 4, 1896.

The buoys of the district will be taken up and replaced with winter buoys about the following dates: Those at Dunkirk, about November 10; at Erie, including gas-buoy, November 18; Sandusky and island buoys, November 20; Maumee Bay, including gas-buoy, November 22; Detroit River, December 1. The light-vessels at Ballard Reef, Lime Kiln Crossing and Bar Point, will be left in position as late as circumstances will permit, probably between December 5 and 10. The position of the latter vessel will be marked by a black buoy.

Waverly Shoal buoy and the buoys in Niagara River will be kept in position as late as the season will allow.

CHAS. V. GRIDLEY, Commander U. S. N.,
Inspector Tenth L. H. District.

NEWS AROUND THE LAKES.

BUFFALO, N. Y.

Special Correspondence to The Marine Record.

The month gave us 28,251,000 bushels of grain by lake, which is far beyond the amount of any previous October. Only once before has the amount gone above 20,000,000 bushels. This is close to a million a day, to say nothing of the 8,063,000 bushels that came in as flour. The total for the season is 131,796,000 bushels of grain and 169,278,000 bushels with flour included. The amount of flour has been exceeded three times slightly, but the grain and the grain with flour included, has never been equaled before.

There has been more or less talk of a grain blockade, and any other port in the world would have been swamped long ago, but with the railroads alone shipping out more than half the amount that came in, the home consumption and the canal ought to take care of the rest, so that there will be nothing more serious than an occasional detention of a day or two. I submit that a wait of this sort is a good deal short of a blockade. This port did have a blockade four or five years ago, when the boats lay waiting week after week, but this can never happen now while the east-bound roads are able to do what they are now doing.

At the same time, vessel owners ought to put their heads together and refuse to take cargoes that are consigned to any elevator and stand the chance of finding several boats ahead of them when they arrive, without a proviso that any rail elevator that happens to be without a cargo at the time, shall be allowed to unload the boat. The Buffalo elevators are pooled as regards to rates, but they are not combined in any way that will help out vessels that happen to be bunched for the same house. This is all wrong. The idea that a vessel should be obliged to lie for days perhaps right in front of an elevator that is all ready to run and will run as soon as it gets a cargo and yet is not allowed to unload the vessel, because the cargo is down for some other house which is pooled with it so far as management of charges is concerned, and which is no better prepared to deliver the grain to any east-bound road than itself. These arrangements are too one-sided.

The new Northern Line warehouse is at length in use and took a flour cargo about the middle of the week. There was some idea that the company would fill the house up with hold flour, as it is not a part of the rail combination that puts storage charge on all flour in warehouse after 20 days, but it is learned that nothing of the sort is thought of. It was this storage charge that has cut down the season's receipt of flour here. It was hoped by the flour men that when there was no longer any risk of choking up the houses before the end of the season the charge would be thrown off, as it would be as cheap to start the winter with the houses full, as empty, but it is announced that there will be no suspension of the rule.

Such a time as we have had waiting for a storm that never came. It was too bad. There was a storm, of course, that blew things to pieces on the upper lakes, but it petered out before it got here. Still the weather office warned vessels to wait for it and some of them did wait patiently for a time. The schooner Ishpeming staid two days with a fair wind and then went out with the warning still up. It is plain that the weather people are not able to say yet just what a storm is going to do.

Insurance men are feeling decidedly blue over the October losses. If they keep up this month there will be no earnings of account left. The feeling was good till October, except in regard to the canceling of insurance on account of laying up, but a great part of that loss has been made up by the vessels going out again.

It will take a vessel 21 feet deep to touch bottom on the reef at the lower bend of the creek. The government authorities concede 20½ feet and the dredgers claim 21. The bottom has been all swept and pronounced smooth since the drill-boat and dredges finished. This is well so far as it goes. The work for the season appears to be done in that part of the harbor.

The death of Washington Bullard was quite unexpected in spite of the fact that he has been out of the office for some time and has been growing visibly feeble for a considerable time. There is not much expectation among marine men that the Erie company will appoint a successor, as the business of the company had been transferred in great part to New York. Mr. Bullard will be greatly missed by marine reporters. He was the most approachable of all the line managers and when his confidence was once obtained he was very ready to give out news of all sorts, but once his confidence was betrayed and he shut down on them. His greatest achievement in business was the destruction of the 'longshoremen's union in 1884, when single handed he dealt the organization a blow from which it never recovered. In the struggle he showed a generalship that was truly remarkable.

It looks as though the lumber carrying trade was about finished for the season. Tom Madden, the Bay City lumberman, has been down here some time, looking after the losses on the barge Mautenee, which are not entirely settled yet. He says that a load on the barge Harold is perhaps all that he shall ship yet this fall. Buffalo is about a month behind last season, in getting in lumber by lake. The total amount to date is 165,833,000 feet, of which 30,286,000 came in October, against 195,047,000 feet last season. CHAMBERLIN.

CHICAGO ILL.

Special Correspondence to The Marine Record.

The schooner Constitution stripped, on her arrival in port last week, with lumber from Lake Superior.

Lumber freights on Lake Michigan at present are on the basis of $1 25 per 1,000 ft. from Menominee to Chicago.

James A. Calbick & Co. chartered the steamer James H. Prentice and consort Halsted for wheat to Toledo at 2½ cents.

W. W. Cook & Co. chartered the steamer Aztec and consort Zapotec for corn to Ogdensburg at 4⅛ cents, free of tolls; the steamer Fred Pabst for clipped oats to Buffalo at 1¾ cents.

The Anchor Line steamer Lycoming collided with and sunk the steam canal boat China, loaded with potatoes lying at the St. Paul elevator dock, Monday. A misunderstanding as to the signals between the captain and engineer occasioned the accident.

At the Independent Tug Line's floating dry-dock, one of the Dunham Towing & Wrecking Co.'s scows was in for recalking. One of Cullerton's sand suckers is in for general repairs, which are being done by William Sewells, shipbuilder.

Carr & Blair chartered the steamer D. C. Whitney and consort Wayne for corn to Buffalo at 2½ cents; steamer Simon J. Murphy corn to Ogdensburg at 4 cents, free of tolls; steamers J. J. McWilliams and Lagonda for corn to Buffalo.

The Lehigh Valley Line steamer Oceanica arrived here Tuesday on her first trip to this port since the collision between her and the steamer William Chisholm by which both steamers were sunk in St. Clair River.

Chief engineer William McKittrick Jr., of the steamer William P. Ketcham, is making an oil painting of that steamer for Capt. James A. Calbick. He is also making an oil painting of the new tug Cascade for Hands & Johnson, Buffalo. Mr. McKittrick paints some excellent pictures and was no doubt born an artist.

Capt. John Prindiville chartered the steamers Phillip Minch and J. V. Tuttle for clipped oats to Buffalo at 2 cents; the steamer Oscar T. Flint for corn to Port Huron at 2 cents; steamer Lansing for corn to Buffalo at 2⅜ cents; steamer Niko for flaxseed to Buffalo at 2⅝ cents; schooner Churchill for rye to Buffalo at 2½ cents.

At Miller Bros.' shipyard the steamer Joys was in dock and had her shaft taken out, straightened and replaced. The tug Luther Loomis was in dock to have a leak stopped and a new sea cock pipe. The extensive repairs on the steamer Wm. A. Haskell, now in dock, are being gotten along with rapidly.

The Dunham Towing & Wrecking Co.'s fine tug T. T. Morford brought along, Monday, to Chicago a tow of seven schooners, comprising the Kate Lyons, Belle Brown, E. R. Blake, Iver Lawson, Julia B. Merrill, Ralph Campbell and Cora A. This now unusual incident puts one in mind of the good old times which are gone by.

Gen. Joseph H. Torrence, who recently purchased the elegant steam yacht Bonita and brought her to Chicago from St. Clair, died of Bright's disease, aged 54 years, at his residence, corner Belvue Place and Lake Shore Drive, near Lincoln Park. His funeral took place on Tuesday, from his late residence to Rosehill cemetery, and was very largely attended.

The heavy gale from the southwest, last week, caused the water in Chicago to be at a very low ebb, and many jams were occasioned thereby, which have kept the tug companies busy moving heavy laden craft up and down the river. WILLIAMS.

CLEVELAND, O.

To the Editor of The Marine Record:

The Grummond Line, announces a new schedule for their Detroit and Cleveland passenger service, which includes a daylight ride between the two cities.

Illness has caused Capt. Peterson, of the steamer J. J. McWilliams, to leave the boat for the balance of the season. Capt. Stratton, whose boat in the Menominee line has been laid up. will take the McWilliams.

Judge Ricks handed down an order this week confirming the sale of the barge Morning Star. The motion was made by James Scanes, the libelant, who asked that a bill of sale be issued to David W. Miller. The barge was recently sold for $315.

Capt. Joe Doville, being an ardent silverite, was paid $1,500 all in silver this week, by the firm of Mitchell & Co., as part insurance on the total loss of the schooner Marsh. The elevator carried the amount to the basement of the building, where it was duly deposited in the vaults of the Marine Bank.

Capt. McKay and H. D. Goulder, Esq., have returned from Washington, where they had been this week in the interests of the Lake Carriers' Association, interviewing the officials of the Light-House Board in an endeavor to secure more and better aids to navigation, the particulars of which were given in our issue of October 29th.

The funeral of Capt. Thomas Burke, who died at his home in this city on Monday, took place on Thursday. Bigelow Lodge, F. and A. M., of which deceased was an old member, took charge of the remains and Chaplain Jones, of the Floating Bethel officiated. Capt. Burke was one of the best known masters on the lakes twenty years ago, but has been ashore for more than ten years and consequently had dropped out of the recollection of quite a large number of people.

The Menominee liner Saxon, found a boulder between Detroit River light and Colchester this week, and arrived here Monday with her forward compartment filled. It is somewhat remarkable to learn that a boulder was found on this well frequented route, towards the close of the season. It must have been there all summer, as there has been nothing to roll boulders along the bottom since the ice went out.

In his annual report upon the work of improving the rivers and harbors, which has just been submitted to the Secretary of War, General Craighill, chief of engineers, recommends that $400,000 be expended on the work of improving the Cleveland harbor during the fiscal year ending June 30, 1898. The amount necessary to complete this project is set down as $1,274,000.

Lieut. G. H. Stafford, U. S. N., of the branch hydrographic office, has received the following letter from Capt. Dunn, master of the Dominion fishery cruiser Petrel: "I have the honor to acknowledge the receipt of the 28th inst, with reference to the foundering of the schooner Sandill. I beg to state that the article in the newspapers is entirely erroneous, and that this is the first time I was aware of such casualty."

The Cleveland Ship Building Co. has just completed repairs on the steamer L. C. Waldo, injured by striking at the Encampment in the Soo River. The damage extended for about 210 feet in length on the bottom of the ship, requiring eighteen plates to be removed, eight of which were renewed and the others re-rolled and put back. There were eighty-eight frames bent and broken, fifty-six of which were renewed, the rest being straightened and replaced. The bottom being constructed on the cellular plan, the inside damage was much more extensive than the number of plates taken off would indicate. The longitudinal girders in the bottom were badly damaged and several plates had to be renewed. The boat was only in the dry-dock eight days and eight hours, and this is considered fast work. SWAIN.

A PORT HURON DU MAURIER.

The world at large may have, and in fact has lost a "Trilby" author, we with others, deplore the fact, for his many merry fancies and the many more merry ones that he would have perpetrated if permitted to continue on this mundane sphere. However, the lake marine, or rather that practical portion of it who may enjoy a spice of nautical phraseology, such as the "Trilby" man used to love to indulge in, need not be at a loss if they subscribe to the Herald at Port Huron. To verify our assertion on this subject let us look over a few of the regular paragraphs which the Michigan "Trilby" enunciates in a bunch, and we quote or clip literally, as follows:

The marine trotter Oceanica is out again and may try to sink another craft before the season is ended.

The lake omnibus Chisholm has been repaired and started again. The captain should have his lead line in his hand all this trip.

The schooner Sunrise unloaded lumber at Howard's mill last Thursday from upper lake ports; freight, which means the vessel is in debt after unloading.

The schooner Roberts was in Dunford's drydock last Thursday getting repaired after being ashore on Kelly's Island. She will try and get in the Safety Freight Line tow, that never lets a craft go ashore.

The Canadian vessels that trade to Uncle Sam's ports are charged two dollars a day, under a law that was passed by an English king in the year A. D. 1,120, which is nothing more than piracy of the rankest kind.

The ferry line that came here petered out. The owner of the two little punts wanted cash to start the ball, but all he could get was promise to pay, and he declared that Miller & Son wanted cash for coal, and away he went. We have a good ferry line here at present, and it is run in ship shape and Bristol fashion by Capt. Alvin Neal.

The steamship Cleveland took a charter from Cutter, Ont., to Cleveland for lumber at 11 shillings on the rail. Capt. Bennett mounted the bridge, sounded the tripod whistle, made a signal to his friend Crawford on the dock, which was Greek to the noodles, sang—

Hands around, ye faithful Masons,
Form the bright fraternal chain
Upon the checkered floor,
My soul is with you all forever, ever more.

The world moves, and the yankee skipper can now go through the Welland canal on Sunday. The sky pilots of the Presbyterian foolishness fought hard; wanted the captains to go and hear old straw thrashed, but Prime Minister Laurier of Canada said: "Gentlemen, thrash your straw in silence, as the yankee skippers want to make money."

COMMISSION NOT ALLOWED.

For the second time, Capt. M. W. Humphrey, of Detroit, has lost his suit against the Eddy Transportation Co., brought to recover $1,000 for commissions in effecting the sale of the steamers John F. Eddy and John Shaw to the Detroit Dry-Dock Co., in February, 1892, which company in turn re-sold them to the Sulphite Fiber Co. Previous to the sale, Capt. Humphrey, who owned stock in the Sulphite Fiber Co., was offered $1,000 commission by the manager of the Eddy Co. if he would sell the boats for $125,000. The Detroit Dry-Dock

Co. wanted the boats sold, for in that event it had been promised a contract for the building of a new iron boat for the Eddy Co. The manager of the dry dock company and agent Humphrey entered into an arrangement by which the former was to furnish a bonus of about $4,000 to help the sulphite company buy the boats if they could be purchased for less than $120 000. Accordingly the Dry-Dock Co., purchased the boats for $118,750, the Eddy Co. not knowing the purchasing company was putting up a bonus for the Sulphite Fiber Co. Immediately afterward the boats were re-sold to the sulphite company. When the Eddy Co. learned of Capt. Humphrey's connection with the sulphite company and the arrangement with the dry-dock commpany, it refused to pay the $1,000 commission. Capt. Humphrey then brought suit and lost his case. He again sued the Eddy Transporation Co. in another form. The judge took the case from the jury because Capt. Humphrey did not communicate all the details of the proposed sale to the Eddy company. An appeal is now to be taken to the Supreme Court.

FLOTSAM, JETSAM AND LAGAN.

Capt. D. C. Sullivan has been given charge of the schooner H. A. Kent.

The schooner Lizzie A. Law, of the Davidson fleet, has gone into winter quarters at Bay City.

Captain Leith, of the steamer Fred Kelley, dislocated his ankle in jumping from the steamer to the dock at Toledo.

The steamer George G. Hadley is chartered to carry general cargo from Duluth to Buffalo during the remainder of the season, at $1 per ton.

The Allegheny and her consort Transfer, ashore on Big Summer Island, have been abandoned as total losses, the Allegheny has broken in two.

Because of the proposed establishment of an opposition line, the Detroit & Cleveland Navigation Co. will next season run two steamers daily between the two cities.

Capt. George R. Bonnah has qualified as master of the schooner J. T. Mott. Capt. J. C. Henderson, her owner and master, injured his hand and blood poisoning set in.

Capt. Peter Batcheller, of Sturgeon Bay, in charge of the tug Sydney D. Smith, has been held for trial before Judge Seaman, at Milwaukee, for violation of a regulation for the navigation of Sturgeon Bay canal.

The Fall River Line announces the discontinuance of their Sunday boat service, the last Sunday trip for the season having been made on October 25th. Commencing November 2nd the boats will leave New York at 5 instead of 5:30 p. m., as at present.

Ben Warren, a sailor hailing from Sarnia, Ont., had his leg crushed last Friday, on the steamer Vanderbilt. He was paying a line through a chock when his leg became entangled and he was dragged into the pipe, badly injuring the leg before he was released.

The first British yacht is said to have been built by Phineas Pett who also invented the frigate in 1603 for Henry, Prince of Wales. She was 28 feet long and 12 feet wide, and lavishly carved, gilded and painted. She was called the Disdain, and in her the prince disported about London bridge.

The talk of the Grummond line purchasing the passenger steamer City of Milwaukee, is probably not well founded. Officers of the Graham & Morton Transportation Co., who have had the Milwaukee under charter, have been trying to buy her, and if they succeed it is quite probable that the new boat will not be built.

Sailors can certainly find some nice, appropriate names. We now learn that "blinker" and "twinkler," are the names applied to the gas buoys on the middle ground in Point Pelee psssage. The name comes from the flash that is characteristic of the light. Now, if we could only have a doodledasher to winkle on the twinkler, accompanied with a double distilled dioptric flame to winkle a wunk on the blinker, vessels might no longer be in danger in getting past Point Pelee.

As a sample of how large vessels are delayed at Chicago, it may be noted that the steamer George W. Morley spent three hours on the crown of La Salle street tunnel, last week. The steamer Philip Minch also spent some time on the bottom at Sixteenth street. It took the Minch 48 hours to reach the dock at South Halsted street, to which she was consigned.

A decision has been reached in the Passaic case. Both the Ben Hur and the Passaic have been held at fault and the damages decreed to be equally divided. The Passaic, therefore, has some $17,000 to pay, that is if the damages allowed amount to the claim. The decision will be an unwelcome one to both sides. It was handed down by Judge Coxe, of the United States District Court, sitting in Utica, N. Y., on Monday.

The Goodrich Line steamer Muskegon, which was damaged while in dry dock at Milwaukee, through the keel blocks canting over and letting her fetch up on the bottom of the dock, has been stripped of her cabin outfit and it is now reported that she will be sold at auctiou November 10th. This course is taken by the Goodrich company with a view to sueing the Milwaukee Dry Dock Co. for the difference between what she may sell for and Inland Lloyd's insurance valuation.

The old lake tug Crusader is being dismantled at Port Huron, and her boiler and engine are to be placed in a steamer which C. D. Thompson proposes to build during the coming winter. While lifting the boiler, last week, the chain fall parted and the boiler dropped into the hold with a force that started butts in the bottom of the tug, and she sank alongside of her dock. The Crusader was built at Port Huron in 1874, and had a measurement of 105.60 net tons. She was a crack lake and river tug in her palmy days, and was always well kept up. Capt. Grummond could give a good account of some of her work.

THE MARQUETTE BREAKWATER.

Maj. Clinton B. Sears, Corps of Engineers, U. S. A., visited Marquette to inspect the breakwater which was lately completed there. During the north-east gale the major said the spectacle was simply grand and the waves were the largest he had seen on Lake Superior. He went through the tunnel in the breakwater during the storm, and says the roar of the breakers was deafening, but that there was not the slightest effect produced upon the harbor storm defense.

WASHINGTON BULLARD PASSED AWAY.

Washington Bullard, general manager of the Union Steamboat Co., died at his home in Buffalo on Friday morning, surrounded by his family and friends.

Washington Bullard was born in Henderson, Jefferson county, New York, on April 25, 1825. The family was among the pioneers of northern New York. He received a common school education and started in the dry goods business in Henderson, when quite young. He remained in this business for eight years, but the calling was not to his taste.

An opportunity was offered him to ship on a lake steamer in the capacity of seaman. Next he secured a clerkship and was rapidly promoted, serving in many other positions. He moved to Toledo, Ohio, in 1866, to act as agent for the Erie Railroad transportation interests, which are now the Union Steamboat Company. From Toledo, where he remained several years, he went to Chicago to accept a more lucrative and important position with the same employers. Mr. Bullard founded the Erie office in Chicago, was a charter member of the Chicago Board of Trade and was agent for the Erie lines which entered the city, he accepted the offer of general manager of the Union Steamboat Co. in 1873, and moved to Buffalo, where he has lived ever since, actively engaged in the management of affairs connected with his important position, including president of the Union Dry Dock Co. Mr. Bullard was well known as one of the most prominent men connected with the vast traffic of the Great Lakes, and in connection with the steamboat business.

It is the general opinion among marine men that in the death of Mr. Bullard the transporation and lake traffic business has suffered a great loss. For fifty odd years Mr. Bullard has given his time and attention to this work. He has been in every branch of the service and the amount of information he had collected was valuable and immense.

The death of Mr. Bullard removes from this community an esteemed citizen and one of the most prominent and capable business men. His personal character was such as to endear him to the hearts of all with whom he came in contact. His broadness of mind and sterling integrity won for him the high esteem and respect of his host of friends. From a humble beginning he made his way to the front ranks of life by his own personal merits. He was kind and considerate in his treatment to his subordinates, fair and impartial in his dealings with all men, he was a member of the Church of the Messiah and a prominent Mason. He was married January 14, 1843, to Miss Fidelia Osgood, at Henderson. Two children, Mrs. W. H. Hagedon, of Chicago, and Paul W. Bullard, of Buffalo, were born to them, all of whom with his sister, Mrs. C. F. Bateman, of Toledo, Ohio, and five grand-children, survive him.

COAL SUPPLY AND DEMAND.

The burning question of coal supply and demand which has exercised the pens of statisticians for the past half century, comes up again in a recent article in Cassier's; wherein they give us the following statement.

In 1807, about the time the steam engine was invented, the consumption of coal in Great Britain was some 6,500,000 gross tons a year. It had risen to 27,000,000 tons in 1816; to 50,875,000 tons in 1850; to 84,042,698 tons in 1860; to 112,875,525 tons in 1870; to 146,969,469 tons in 1880; to 181,614,288 tons in 1890, and to 188,277,525 gross tons (210,870,828 net tons) in 1894. The result of the discussion on the subject of the duration of the coal supply of Great Britain was the conclusion that if the output increases in the same ratio as it has for twenty or thirty years, the coal will be exhausted in a little over a century. These estimates are now regarded as excessive, as it is conceded that there is in each nation a limit to industrial development, which, without considering the great economics in the use of fuel, will also limit the expenses of coal production. Mr. Gruener places this limit for England at 250,000,000 tons, which supposes a mining population of 1,000,000 miners and a working population of 5,000,000.

In the United States the production of coal has been increasing in a much greater ratio than in Great Britain. We cannot go back to the eighteenth century and give figures of production of coal, nor is that necessary in order to indicate how enormous has been the increase in its production and consumption in the United States. At the tenth census, 1880, the production of coal in the United States is reported at 71,481,570 net tons; at the eleventh census, 1889, it had risen to 141,229,513 net tons, nearly double, and in 1893, according to the report of E. W. Parwer, of the United States geological survey, it was 182,352,774 net tons, an increase of more than two and one-half times in thirteen years, doubling about every five years.

Similar increases could be shown for the other great coal-producing countries, as Belgium, Germany, Austria, France and Russia. The world's demand for heat, and power are increasing marvelously, while the world's supply of coal is a definite quantity, and it is an evident proposition that with the exhaustion of its coal not only will the power and influence of a nation decline, but even its existence may be imperiled.

HOLLOW FORGED STEEL SHAFTS.

Shafts for stern wheel steamers on the Mississippi and Ohio Rivers are small in diameter and very long. In order to reduce the overhanging weight at the stern, a very light and strong shaft is required. Compared with a wrought iron shaft 14 inches diameter and 30 feet long, as is frequently seen on these boats, a solid steel shaft of the same dimensions would be one-third stronger. A solid shaft of nickel steel would be one and one-half times stronger. A steel shaft of the same outside diameter with a 3½ inch hole bored through it and oil tempered would be twice as strong. A hollow nickel steel shaft of the same type would be three times as strong. A hollow forged steel shaft of the same weight but of 22 inches outside diameter and a 17-inch hole through it would be three times as strong, and if oil tempered four and one-half times as strong. If made of nickel steel it would be six times as strong, and if oil tempered eight times as strong

The ability to produce forgings of this hollow variety has led to their adoption in many places where castings, both of iron and steel, have previously been used. This substitution has resulted in considerably lightening the weights of such pieces and also the parts in which they rest and move.

Conspicuous among hollow forged shafts are the Ferris wheel shaft, 32 inches outside diameter, 16 inches inside diameter, 45 feet long, weighing 89,320 pounds, and shafts for the steamers Puritan, Plymouth and Pilgrim of the Old Colony Steamship Company, 20½ inches outside diameter, 9 inches inside diameter, weighing 65,832 pounds each. Shafts for the steamers of the International Steamship Company, the New York, Paris, St. Louis and St. Paul, are 21 inches in diameter; crank pins, 22 inches diameter, with a 10-inch hole through both. Shafts for the engines of the Cicero and Proviso Electric Road, Chicago, are 24 inches diameter with an 8-inch hole through them. Shafts for the engines of the North Shore Electric Road, Chicago, are 22 inches outside diameter, 7½ inches inside diameter. Shafts for the engines of the Northwestern Elevated Railway and also for the Union Loop Railroad, Chicago, are 28 inches outside diameter with an 11-inch hole through them. The shafts for the engines of the Chicago City Railway Company, Chicago, are 20 inches outside diameter, with a 10-inch hole through them.

All of the new cruisers and battleships have hollow forged shafts of nickel steel, thus giving great strength and little weight.

NOTICE TO MARINERS.

REMOVAL OF WRECK OF SCHOONER LITTLE WISSAHICKON.—The schooner Little Wissahickon which lay sunk in Lake Erie in about 13 fathoms, with her masts showing above water, 22 miles S. 3° W. of Rondeau and 25 miles E. 3° N. of Pointe Pelee light has been blown up by the Dominion steamer Petrel, and no longer forms an obstruction to navigation.

The site of the wreck was swept to a depth of 20 feet after the masts were blown out and no wreckage was encountered.

WRECK IN LAKE ERIE.—Notice has been received of the sinking, by the collision on the 19th instant, of the U. S. steamer Grand Traverse 869 tons, of Buffalo, N. Y., in 35 feet of water ½ mile north of Colchester Reef light, Lake Erie. The wreck lies in the channel of commerce and is a dangerous menace to navigation. Lights have been placed on the wreck by the underwriters.

CORRECTION OF POSITION, BAY STATE SHOAL GAS BUOY.—The position of the gas buoy described as the "Bay State Shoal Buoy" in part V of Notice to Mariners, No. 47, of 1896, should be $\frac{9}{16}$ mile below Cross Over Island instead of 1½ miles. This notice affects Admiralty Charts Nos. 259 b and 797.

SHOAL OPPOSITE DETROIT.—Notice has been received from the American government of the discovery of a shoal about 1,000 feet from the dock at the foot of Wayne street, or a little below the Detroit and Cleveland steamboat dock. The shoal is a small lump, probably of stones or gravel, and the least water over it is 15 feet. It has been marked by a black and red spar. This notice affects Admiralty Charts Nos. 330, 332 and 490.

WATER GAUGE AT AMHERSTBURG.—A water gauge has been established on Shipman's coal dock at Amherstburg, near the mouth of the River Detroit.

This gauge will show at all times the depth of water over Ballards Reef and Lime Kiln Crossing. If masters of vessels pass close to Shipman's coal dock and sound a signal of two long and two short blasts, they will be notified of the stage of the water.

The gauge is erected on the south end of the dock, in order to give vessels an opportunity of coming to, if necessary, and awaiting better water.

CORRECTION OF POSITION OF LEAMINGTON LIGHT.—Leamington light is shown on Admiralty Charts 332 and 490 (large corrections to 1890) about one mile S. E. of its actual position. It stands on the bank, at the head of the government wharf at Leamington. Approximate position, taken from Admiralty Chart No. 490: Latitude N. 42° 1′ 50″; longitude W. 82° 35′ 38″.

F. GOURDEAU,
Deputy Minister of Marine and Fisheries.

Department of Marine and Fisheries, Ottawa, Canada, October 14, 1896.

LAKE MICHIGAN, GREEN BAY, ETC., BUOYAGE.—Notice is hereby given that the iron buoys in the ninth light-house district will be taken up for the winter and replaced by spar buoys similarly painted, as follows: Green Bay City to De Pere, Wisconsin, November 15; Sturgeon Bay, Wisconsin, November 20; Green Bay, Wisconsin and Michigan, November 21 and 22; channels between Lake Michigan and Green Bay, Wisconsin and Michigan, November 23; Fox Island Shoals, Michigan, November 24; Mackinac Straits (west of old Mackinac light station), and channels north and east of Beaver Island group, Michigan, November 25 and 26; off Sheboygan, Wisconsin, November 27; off Milwaukee and Racine, Wisconsin, November 28; off Chicago, Illinois, November 30.

By order of the Light-House Board:

JOHN G. WALKER,
Rear Admiral, U. S. Navy, Chairman.

Office of the Light-House Board,
Washington, D. C., November 2, 1896.

SCHOONER CLEARS FOR THE GULF.

The small schooner Starke, built in Milwaukee in 1876, and formerly owned there, cleared from Chicago, a few days ago for Lake Charles, La., via Montreal. She will stop at Pine Lake, Mich., for a cargo of lumber to be delivered at Erie, Pa. The Starke is to engage in the lumber trade from Lake Charles to points in Central America. Her new owners are De Pingree & Kafmann, of Lake Charles.

MARINE PATENTS GRANTED.

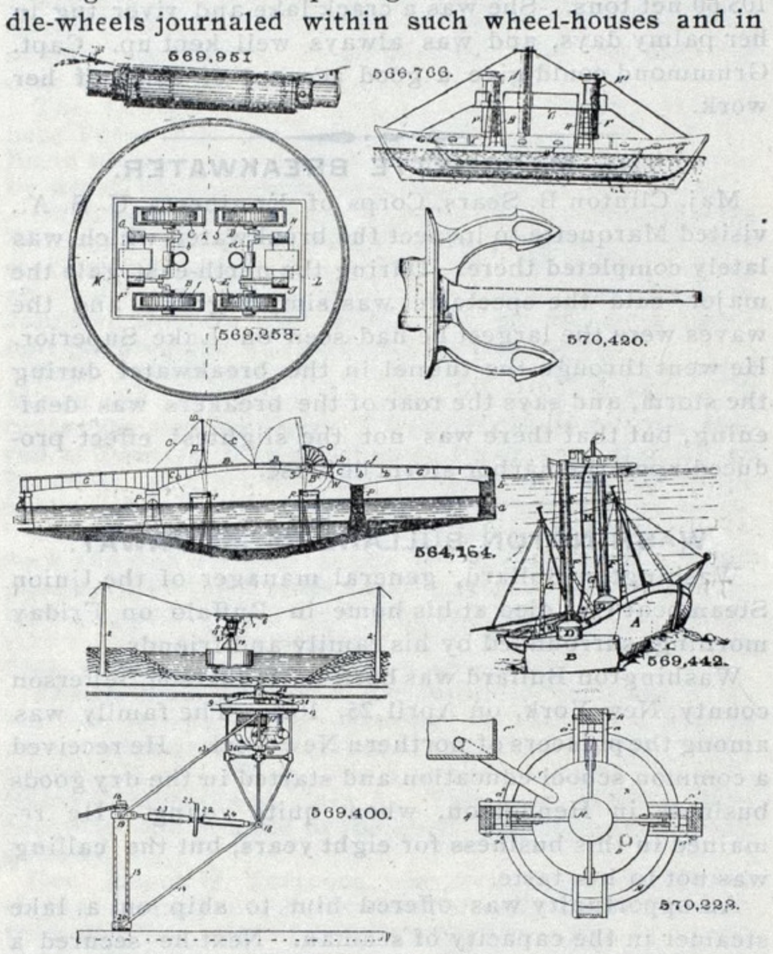
No. 569,442. Apparatus for raising sunken vessels. Albert H. Wolf, West Dover, Ohio, assignor of one-half to Nicholas J. Boylan, Cleveland, Ohio. Filed May 28, 1896. Serial No. 593,489.

Claim.—The pontoon B, having dome D on its middle top part, and the chamber C, located in its interior middle part, the stand-pipe E on the top of said chamber C, and extending upward out through the dome, and the hose H connected with the top of the dome, all constructed and combined as and for the purpose set forth.

No. 569,253. Steamboat. Soren D. Thorson, Chicago, Ill. Filed Nov. 7, 1895. Serial No. 568,160.

Claim.—In a vessel or ship as described, the combination with a hull in the form of a section of a sphere and having parallel open channels across its bottom and wheel-houses opening to such channels, of paddle-wheels located within the wheel-houses and having their journal-bearings above the water-draft line.

2. A boat as described having a circular hull whose bottom is of uniform curvature in all directions and across which run a pair of parallel open channels, and having wheel-houses opening to such channels and paddle-wheels journaled within such wheel-houses and in



planes parallel with the channels, and for the purpose set forth.

No. 570,420. Anchor. Frederick Baldt, Chester, Pa. Filed June 12, 1896. Serial No. 595,260.

Claim.—In an anchor, a rectangular shank, a ball integral with and on one end of said shank, a groove having a curved bottom, formed on the bottom of the said ball, a crown-piece having integral flukes, a central longitudinal opening in the fluke side of the crown-piece, and a cup-shaped opening on the rear side, lugs extending from the crown-piece and provided with openings, a pin adapted to pass through said openings and work in the grove in the bottom of the ball.

No. 566,766. Life-boat. William F. James, Quintana, Tex. Filed Sept. 18, 1895. Serial No. 562,875.

Claim.—1. A life-boat provided with a central hull, towers extending from the top thereof, ladders leading from the hull up to the said towers, a revoluble hatch for the upper ends of the said towers, and a platform supported above the said hull and upon which open the said hatches.

2. A life-boat, comprising a central hull, floats arranged parallel with the hull and rigid connected therewith, a platform extending above the said hull, towers connecting the said platform with the interior of the hull, hatches at the upper end of the towers opening to the platform, and ladders extending from the said platform to the said floats.

3. A life-boat comprising a central hull, floats extending parallel to the said central hull and rigidly connected therewith, and a hydraulic propelling device located in the said central hull and having its pipes extending into the said floats, to eject water through the same, to propel the boat forward or backward, or to steer the same.

No. 569,400. Means for propelling canal-boats, etc., Samuel W. Blach, Yonkers, N. Y. Filed July 7, 1894. Serial No. 516,799.

Claim.—1. The combination with a vehicle, of a laternally movable frame supported thereby, a gripping-wheel base supported by and vertically jointed to said frame, gripping-wheels horizontally mounted on said base substantially over said joint, actuating mechanism for the gripping-wheels, and a fixed way engaged by said wheels.

No. 570,223. Apparatus for utilizing wave-power. Francis C. Little, Portland, Oregon. Filed Apr. 22, 1896. Serial No. 588,599.

Claim.—1. In an apparatus designed for utilizing the wave-power of the sea, and for compressing air, the combination of vertical posts or uprights, a hollow float arranged between the same, the top of which is closed and the bottom open, an air-supply pipe communicating therewith, and provided with an automatic valve which opens inwardly, and a compressed air pipe communicating therewith, and with an air-tank and provided with a valve which opens outwardly, said float being adapted to rise and fall with the motion of the waves.

No. 569,951. Device for propelling vessels. John Bond, Turlock, Cal. Filed Dec. 17, 1895. Serial No. 572,407.

Claim.—1. In a vessel, open-ended cylinders located below the bottom of the vessel essentially in line with each other, as intermediate engine-compartment, connections between the engines and plungers which are adapted to reciprocate in the outer cylinders, cylinders of larger diameter intermediate between the outer ends of the plunger-cylinders and the central compartment having annular heads connecting them with the smaller plunger-cylinders, perforations extending longitudinally in annual series within said heads, with transverse slots or channels connecting the perforations with the interior of the enlarged cylinders whereby the water is admitted to the interior end of the plunger-cylinders and expelled therefrom by each reciprocation of the plunger and water is admitted to the outer end of the plunger-cylinders and expelled therefrom by the opposite movements of the piston and gates, whereby the end of the cylinder and the annular openings of the larger cylinder may be closed or opened.

2. In a vessel open-ended cylinders located below the bottom of the vessel, essentially in line with each other, other cylinders of larger diameter connecting with the inner ends of the first-named cylinders, with heads at their junction, provided with an annular series of passages with slots or channels leading from said passages to the interior of the enlarged cylinders, plungers reciprocating within the smaller cylinders, a central engine-compartment and mechanism by which the plungers are reciprocated, a perforated rotatable ring at the outer ends of the passages, and mechanism by which said ring is turned so that its perforations coincide with those of the annular cylinder-head, or close them.

3. In a vessel, a central engine-chamber located beneath the bottom of the vessel, open-ended cylinders of different diameters extending in line with said chamber plungers reciprocating in the outer and smaller cylinders and connected with the engines of the central chamber, annular perforated rings, and mechanism by which they are rotated over the openings in the heads of the larger cylinders, and swinging gates and operating mechanism connected with a lever-arm thereon by which the outer ends of the smaller cylinders are closable.

No. 564,164. Bascule or tilting bridge. Edward S. Shaw, Cambridge, Mass. Filed June 7, 1895. Serial No. 552,028.

Claim.—1. A bridge containing a fixed cantaliver arm or portion, projecting horizontally from a pier or abutment, and a bascule, or counterweighted, tilting, or upward-and-downward turning portion, pivoted upon or near the end of the said cantaliver-arm.

2. A number of cantaliver girders or trusses, placed parallel to one another, with intervals between, and supporting, at or near their outer extremities, a horizontal shaft, or a number of disconnected shafts, axles, pivots or trunnions upon which a number of bascule, or tilting, girders or trusses, turn up and down, the rear or counterweighted ends of the bascule girders or trusses, being contained, inclosed, or packed in the intervals or spaces between the cantaliver girders or trusses, when the bascules are in their horizontal position, and the draw is closed.

3. A bascule-bridge, having its bascules, or tilting longitudinal girders, trusses or arms, pivoted upon or near the ends of fixed cantaliver girders, trusses or arms, projecting from piers or abutments of the bridge.

4. A bascule bridge, in which the bascules, or tilting girders, trusses or arms, are pivoted upon a shaft or axle, placed at or near the ends of fixed cantaliver girders, trusses, or arms, the rear or balancing ends of the bascules bearing upward upon, and being confined by transverse beams, connecting the cantaliver-arms.

5. The combination of the bascules B B′, cantalivers C and pivots S, substantially as shown and described.

6. The combination of the bascules B B′, cantalivers C, pivots S, counterweights W and floor-beams b, upon which the counterweights bear.

CARGO STEAMERS FOR LAKE AND OCEAN SERVICE.

WRITTEN BY W. E. REDWAY, NAVAL ARCHITECT, BUFFALO, FOR THE MARINE RECORD.

Looking backward for some forty years, from 1850 to 1860 to that period in American maritime history during which the great contest was fought out between the Cunards of Britain and the Collins's of the United States, for supremacy in the passenger trade of the North Atlantic; and when those magnificent sailing ships, which carried the American flag to almost every important seaport in the known world, were adding so much to the wealth and prestige of her people; tracing, during the civil war and twenty years following, the gradual and almost complete extinction of her merchant marine (during which latter period all the energies of her people were so devoted to the internal reconstruction of their nation, upon the foundations laid during that momentous struggle, that her maritime interests were either practically left in abeyance or prevented by unwise legislation from attaining that development which the growth of their commerce required), until the present time when, if "coming events cast their shadows before," the American nation is again about to enter the lists as a competitor in the ocean traffic of the world, it will be interesting to note whether, in the new program, the orthodox ocean tramp is to have pre-eminence as a freight carrier, or whether the progressive characteristics of the people, discarding prejudice, will cause a more suitable type of vessel to be adopted.

The improvement in passenger steamers during this period has been enormous. The Collins boats of 1850 to 1858, viz.: the Arctic, Baltic, Atlantic and Pacific, were of 3,000 tons and 800 H. P., making the trip across the Atlantic in 11 days 1 hour; while the Saint Paul and Saint Louis of to-day are of 20,000 I. H. P., making the trip in just one-half of the time.

An equal improvement has taken place with regard to their comfort and accommodation as compared with the former boats.

While, however, so much has been accomplished in the development of passenger steamers, it seems somewhat curious that the cargo boat or ocean tramp of to-day has been improved so little as compared with the designs of twenty years ago.

It is true that the marine engineer, with his compound and triple-expansion engines, has kept in the van of improvement, and has reduced the coal consumption some 40 or 50 per cent. during that period, but the "tramp" does not appear to "move on" much faster than of yore, although she does travel at a less proportionate expense.

Whether this small result is due to the more favorable opportunities afforded the engineer, by reason of the large field existing in the technicalities of his profession, or to the want of adequate appreciation by the naval architect of the results likely to be obtained by a radical change of form in his model, the fact remains that the modern cargo steamer is still practically nothing more than a square tank with its corners rounded off, having a coefficient of fineness of .80 and often .85. If fullness of form only were the great desideratum, then the fashionable cargo ship of today would be regarded as the "ne plus ultra" of naval design, but if strength, speed, seaworthiness and economical construction are factors in the problem, then it is far from what it should be, and naval architects must shoulder the responsibility or bestir themselves to produce results with the cargo steamer which will bear some fair and reasonable comparison, as regards improvement, with her graceful and elegant sister, the passenger boat.

Capitalists are naturally conservative, prone rather to embark in undertakings wherein a moderate return is certain, than to venture into the realm of experiment where the alluring brightness of possible results is oftentimes obscured by circumstances unforeseen and consequently unprovided for; hence, probably, one reason for the paucity of attempts at any radical changes.

That a large field exists wherein the earning power, in proportion to capital invested, of cargo steamers may be increased, there can be no doubt; that the direction in which this must be looked for is in that of form rather than equipment or general construction, is equally certain; for in all matters of detail the modern system of architecture leaves but little to be desired, so far as present requirements go.

Fortunately for the future of shipbuilding, there are not wanting some capitalists who, realizing the great advantages likely to be secured by an improvement in the design of cargo vessels, are willing to encourage progress in that direction by backing their opinion with their money, and the result has been the construction of a fleet of vessels in the United States known as "whalebacks," which have achieved a considerable measure of success upon the Great Lakes.

The distinctive features of these whalebacks are abscence of bulwark and top-hamper, no sheer, rounded gunwales all fore and aft, flush decks, and bows shaped like a "hog's nose," instead of the ordinary straight stem. Turtle backs on bow and stern are common enough, and flush deck steamers of the spar deck type, without bulwarks, are far from unusual, but the peculiar formation of this bow marks the vessels referred to as a distinct departure in form from orthodox practice.

The advantages claimed for these vessels are, that they are exceedingly staunch, have large capacity and deadweight ability, roll easily, are faster than other cargo boats of equivalent size and power, have small consumption of fuel, and that their stem is of a form to produce the least possible destruction in the event of collision.

Whatever advantage may be claimed for the "hog's nose" bows by their enthusiastic projectors, they will scarcely satisfy the educated eye of the naval architect that they represent the most perfect known form of naval design, or that the long-looked for "form of least resistance" has been discovered in them.

A long overhanging structure, subject to the stress of the weight of anchors and chains in a heavy head sea, does not appear to be a desirable arrangement, especially when light. Further, an unprotected fore-end, which has to bore through every wave it meets, and consequently allows the upper deck to become constantly swept by the sea, can add nothing to the speed, capability or comfort of a steamer, and experience has recently proved this assumption with the C. W. Wetmore on the Pacific coast.

The problem to be solved is to carry the largest cargo at cheapest rate, fastest speed and with safety at a limited draft of water.

The whaleback solution is by means of an almost submerged steel tube with pointed ends, and it must be admitted that the experiment has been boldly conceived and executed. But neither submarine nor semi-submarine navigation has yet become any more a commercial reality than has aerial navigation, for while both are theoretically possible, neither has yet nor is likely in the immediate future to become sufficiently practicable to command universal adoption.

Neither freight nor passenger vessels will ever become general which have not at least sufficient surplus buoyancy to keep their heads above water.

Capt. Alex. McDougall, of Duluth, Minn., has pointed out and been enabled to follow a new departure in marine construction with his whalebacks, and has taught the shipping community some valuable lessons thereby. For the application of the principles involved therein he is entitled to the credit and profit due to the importance of his work, but finality has not been reached in naval architecture any more than in any other science.

[CONTINUED NEXT WEEK.]

A COLLINGWOOD LAUNCH.

They don't slide them off or down as slick at Collingwood, Ont., as they might do, the following being the second falling over, part of it in the course of launching, that we have chronicled within the past year or two. In this instance the account is taken from their own local paper: "Mr. Robert Morrill prepared to launch the tug which he built at the head of the Hurontario street slip. Everything was ready and the signal was given to knock the blocks out. The new boat began to slide towards the element, but, unfortunately the ways broke and the tug fell over. The tugs Saucy Jim and W. J. Aikens made a number of attempts to pull off the new boat. The ceremony of christening was performed by little Miss Jaques, daughter of Capt. C. Jaques. The vessel will hereafter be known by the name of Signal. The steamer was built to the order of Parry Sound parties, to take the place of the steamer Magnettawan, which was lost last July near Byng Inlet. Her dimensions are—Length of keel, 92 feet; breadth, 16 feet; and depth, 7½ feet. The machinery of the Magnettawan will be used in the new keel.

THE COMMERCE OF BUFFALO.

The following comparative tables compiled this week by custom-house officials at Buffalo will give a fair indication of the importance of the commerce of that large port.

Flour and grain receipts by lake for the month of October:

	1896.	1895.	1894.
Total bushels.....	27,522,826	20,077,590	15,031,104

From the opening of navigation to November 1:

	1896.	1895.	1894.
Flour, barrels.....	7,373,266	6,392,700	8,956,510
Wheat, bushels	44,570,193	29,013,500	41,613,030
Corn, bushels.....	38,723,688	31,961,780	23,549,200
Oats, bushels.....	35,044,923	19,372,050	13,033,890
Barley, bushels.....	10,319,614	3,808,140	4,883,570
Rye, bushels.....	3,797,634	430,840	360,810
Total bushels.....	132,456,052	84,586,310	83,440,500

Aggregate receipts of flour and grain by lake for the month of October:

	Flour, bbls.	Grain, bu.	Grain, incl. flour, bu.
1896.....	1,586,353	27,522.826	35,454,591
1895.....	1,377,670	20,077,590	26,965,940
1894.....	1,855,650	15,031,104	24,309,354
1893.....	1,583,815	25,528,390	33,222,465

From the opening of navigation to November 1:

	Flour, bbls.	Grain, bu.	Grain, incl. flour, bu.
1896.....	7,373,266	132,456,052	169,322.382
1895.....	6,392,700	84,586,310	116,549,810
1894.....	8,956,510	83,440,500	128,223,050
1893.....	7,953,441	117,717,795	157,845,000

Lake shipments for the month of October:

	1896.	1895.	1894.
Coal, tons.....	378,977	486,144	389,378

From the opening of navigation to November 1:

	1896.	1895.	1894.
Coal, tons.....	1,953,058	1,962,325	1,953,355

Lumber and shingle receipts and shipments from the opening of navigation to November 1:

Receipts by lake:

	1896.	1895.	1894.
Lumber, feet.....	168,578,894	187,320,590	173,987,620
Shingles, number...	90,180,264	75,056,500	96,867,450

Freights—Rates on last shipments in October:

	1896. Cts.	1895. Cts.	1894. Cts.
Lake, coal, ton, Buffalo to Chicago and Duluth.....	30 20	90 30	60 30
Lake, corn, Chicago, and wheat, Duluth to Buffalo.....	2⅜ 3	2¾ 6	⅞ 2¾
Canal, wheat and corn, Buffalo to New York.....	3¾ 3½	2½ 2¼	3 2¾

The table being compiled from custom-house records is, of course, beyond question and may be considered as official in its accuracy of detail throughout.

A SEA LAWYER'S COMPLAINT.

I attended the U. S. District Court on Friday last, when engineer Eagan, of the steamer E. W. Oglebay, was on trial after being arrested by Marshal Kane, Thursday, on complaint of a fireman named Regall, who said that Egan had struck him when the steamer was on Lake Huron, and racing with the steamer Owego. The fireman also stated that the boilers of the Oglebay were carrying 210 pounds of steam, whereas she was only allowed 170 pounds. The engineer was examined, as were several witnesses, one of whom was a fireman who testified that it was he and not the engineer who struck Regall. Upon this evidence the engineer was discharged. The fireman asked to have the steamboat inspectors go aboard the Oglebay and examine her safety valves, to see if they had been tampered with, Eagan, who bears a good record, says that some time ago sixteen firemen came aboard his boat and tried to get the fireman on board his boat to quit work. He drove them off the boat that time with a revolver, and he thinks this is a scheme of retaliation. However this may be, I never heard anyone with more talk to the minute than fireman Regall. The prosecuting attorney had him contradict his evidence almost on every other word, and, in fact, when left alone to tell his story he simply confounded confusion, to say the least. Anyone hearing the evidence could not do otherwise than as commissioner Fairfield did, and that was to discharge the engineer from custody and to exonerate him from all suspicion even, of assaulting a workman in the exercise of his duty.

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Entered at Cleveland Postoffice as Second-Class Mail Matter.

CLEVELAND, O., NOVEMBER 5, 1896.

CAPTAIN George A. Quinn, Corps of Engineers, U. S. A., in charge at Milwaukee for the rivers and harbors of that district, advertises for bids in the current issue of THE RECORD for pier building at several ports on the west shore of Lake Michigan. Bids will be received up to noon on Nov. 27.

THE catch of fish on Lake Erie, especially in the locality of Toledo, has been much larger up to the present time than it was last year. The fish hatcheries and the commissioners in charge of propagating the spawn are to be commended from the standpoint of furnishing to the public a healthy and excellent article of diet at a moderate cost, and this feature is equally true of all the states bordering on the lakes. It is beyond question, but that the fishing seasons would long ago have proved failures if the several species had not been propagated by the fish hatcheries and the careful distribution of same by the government employes.

IN addition to a large amount of government work at ports on Lake Michigan looking towards the improvement and conservancy of harbors, there is also a considerable share of work to be given out by private firms. The Chicago & Pacific Elevator Co. will rebuild the elevators on Goose Island, Chicago, at a cost of $300,000. The Armour Elevator Co. intend building an annex to its Minnesota elevator. It will have a capacity of 2,000,000 bushels, and will cost $400,000, to be completed by January 1. The basin opposite the elevator at St. Joseph, Mich., is to be dredged, also the Benton Harbor canal for a distance of 2,000 feet. There are also a number of other important deals to go through ready for the opening of navigation next season in wharf building and fueling docks.

WE are pained to record the death of Mr. Washington Bullard, general manager of the Union Line, at Buffalo on Friday last. Mr. Bullard had been connected with lake transportation interests all of his active life. For many years he represented his line in Chicago, taking up the general management some twenty odd years ago. He leaves a host of friends among vessel owners all over the lakes. THE RECORD also numbered him among its friends. President J. J. H. Brown, of the Lake Carriers' Association, called a meeting of the association so that due and appropriate action might be taken on the loss of a valued member who was one of its organizers and its first president before the consolidation of all interests formed the present association.

BAD TREATMENT OF SAILORS.

We are accustomed to hear of all kinds of treatment which "Jack ashore" receives in the larger seaports of the world. Liverpool, with its Dennison street and Waterloo Road localities; London, and its Tower Hill, Radcliffe Highway episodes; New York, Cherry street and Fourth Ward drugging tactics on the simple-hearted, deep-water sailor, not to mention the shanghaeing, crimping, and blood-money notoriety of 'Frisco, or, in fact, a number of other large ports, as the books say, "too numerous to mention." Being an every-day occurrence, drugging, robbing, assaulting, maltreating, or shanghaeing and crimping sailors is only noticed by the police, religious and philosophical circles. The ordinary citizen hears of such cases and immediately proceeds to ignore and forget anything, especially if of an unpleasant nature, about the fellows who are usually friendless and poor, and birds of passage at the best.

We are therefore somewhat surprised at this date to learn that a great deal of the seaport tactics are being pursued on the lakes, though, of course, Chicago, some years ago, and even Buffalo, and perhaps in a lesser degree, Cleveland, often startled us with isolated cases of extreme depravity and brutality, which happily are now more noticeable by their absence than frequency. Moreover, as we have said, the depravity exists, and it is a question if Jack can be picked up and put into a glass case or Sunday school the moment that he puts his foot ashore, and until something of this sort can be done, he is generally bound to wander into trouble by, or through mixing with strange company and folks, who are simply his friends pro tem, to become his enemy, robber or assailant, when opportunity offers.

The foregoing is preliminary to an article published in a Toledo daily this week, as follows:

"For several months the police of Toledo have been greatly annoyed by continual complaints from sailors who have been lured to low dives by unprincipled land lubbers, and robbed of their hard earned wages. There have been, perhaps, thirty or forty complaints of this character during the present year, but it is very seldom an arrest is made, for the reason that the sailor is usually unfamiliar with the city or its tough dives and tough people, and he is generally made beastly drunk in the ordinary way, or administered a knock-out blow, which will effectually lay out the toughest and most hardened old salt that sails on fresh water.

It is then but the work of a moment to go through his pockets, and leave him in some secluded spot to waken several hours later, minus cash or other articles of value.

He goes to the police station, or accepts the situation philosphically, and says nothing. But usually he goes to the station and makes a "holler." A man is detailed to go with him, but he cannot tell where he was the night before, and doesn't know who were with him. The result is that he either gets a trip to the works for begging, or gets drunk again on the funds of some boon companion, or strikes a boat and sails for some other port, only to return to Toledo perhaps a few months thereafter. Several instances can be called to mind, and every once in a while the body of a sailor is found in the river with the marks of a blow on the head, but always without anything in his pockets.

Twice this week have complaints of this kind been made; one man lost $7.50, and the other $17. Another recent instance is cited where $31 was lost, and another $28; still another man lost $46. The solution of this problem and how to remedy this matter, is a difficult one indeed for the police. They know that a class of toughs hang about the docks and dock resorts, and are satisfied they are the fellows who do this work. They never work, but always have money. Yet they operate shrewdly, in pairs or trios, and always at night."

The Toledo article is no doubt correct to the letter, and it is most difficult to point out the proper means to be used towards eradicating the evil. Certainly it ought not to be allowed to increase or grow at other ports, at present more law-abiding in this connection than Toledo is. The only, or rather the first steps should be taken by the police, and where a sailor is seen in the company of well known local crooks or suspicious strangers, he should, at least, be warned of his danger, and as early as possible placed out of harm's way until capable of again navigating among the shoals and quicksands of a strange city. This the port should at least do for its own reputation, if not for the sake of common humanity, or we are afraid the evil will grow and spread to all lake ports, and "Jack ashore" be no better off on the lakes than he was a quarter or half a century ago at the large European, British and American seaports.

DEEPER CHANNELS AND A CHANGE OF FREIGHT RATES.

The twenty-twenty-one-foot channel over the shoalest spots connecting the chain of lakes is fast drawing to an actuality. What could not have been credited or even thought of a few years ago is now almost accomplished and a five thousand ton cargo will soon become a common cargo or load, as it is now called. There is one thing more, however, to be desired, and that is a double track or waterway over the narrowest and shoalest connecting spots on the lakes. A portion of this idea has already been made possible in the Soo River and by the completion of the second channel (Hay Lake) cut. More especially, perhaps, should vessels' interests be gratified at the opening of the new cut at Sailors' Encampment, whereby, vessels may now load to a draft of 16½ feet instead of the scant 14½ feet as formerly and sometimes to a neat 14 feet.

The deeper channels will, of course, have the effect of lowering freight or cargo rates and this in itself means a benefit to the farmers of the West and Northwest with a corresponding degree of prosperity to the owners of large modern steel steamers. There is no arguing against the cheapening of transportation rates. It is for the universal benefit of mankind and from the producer to the consumer, hence, while there are many kickers against Federal improvements, or those paid for by the general government, to the derogation of small and medium sized tonnage, the fact remains that the deepening of lake waterways is of general and universal benefit to the citizens at large. Steamers are now afloat and others fitting out and building, which, when the twenty-foot channel is completed, can carry a 5,000 ton cargo as opposed to the paltry 500 tons of but a few years ago, and it should also be considered that the freight charges will be correspondingly reduced on all commodities water-borne over the Great Lakes without any deductions from the earnings of the vessel, as it is generally admitted that the daily disbursement of a ship averaging, say, one thousand tons, is almost on a par with that of a four or five thousand ton ship, so that owners of large tonnage, as well as the general public, stand an equal chance of being benefited by the deepening of lake channels and the consequent change and cheapening of lake freight rates.

WE have been often amused in the past by otherwise all-round capable writers making the most foolish possible charges against the fraternity or association of underwriters known as Lloyds, London. The writers, whom we refer to have been journalists, shipping people of various sorts or contributors to magazines or daily newspapers. Charges have been made and more or less substantiated at least to the satisfaction of the writers, that Lloyds discriminated in accepting risks on national tonnage, cargo, or freights, even the types of construction, builder and the ownership has been said to draw the line in underwriting at Lloyds. Such assertions are utterly baseless, containing neither rhyme nor reason. Lloyds as individuals will take any risk where they think there is a fair chance of earning a premium, nor do they look for too long a chance either, they are out for and after the dollars, and, judging from the survival, prosperity and wealth of the descendants of the old coffee-house clique, they, as a rule, generally know where they are at. Lloyds, instead of narrowly discriminating, accept risks on the successful launching of a ship or a baby, in the former case, whether side or end on and they possibly would not object to taking chances on a vertical dip, in the latter case, time, sex or number is immaterial so long as the premium is forthcoming. Even further may we go, or rather do they go, for they have been easing the consciences of American citizens recently by taking premiums and issuing policies against or to cover the election or non-election of the late presidential candidate on the Democratic ticket, as for instance, large business houses figuring on the basis of a 50 per cent. depression, if the Democrats elected their president, a firm doing a yearly business of $100,000 thought that they stood to lose $50,000. By paying a premium of 9 per cent. to the Lloyds companies they insured against this conjectural loss. McKinley being elected, the firm of course got no insurance against loss and loses the 9 per cent. premium. Now, we must say that the underwriters who tackle a problem like the foregoing are not the people to discriminate in the ordinary affairs of every day business, nor do they do it.

LAKE shipbuilding is by no means to remain at a standstill simply because the country has been experiencing an unsettled commercial feeling through largely conjectural changes in politics. When the cry of over-production of tonnage goes up, as it does every now and again, no account is taken of the vast increase of commerce, or rather there is no adequate allowance in new tonnage made for the actual development of trade which has been found to steadily advance season after season. A builder of wooden vessels on the lakes has always ignored the cry of over-production, and during even the dullest times he has consistently kept his yard going with a couple of keels on the blocks and ready for early completion. The result, during the past decade, has proved the wisdom of this step as the vessels have nearly always been purchased when ready for service. At the present there is a rumor of two more keels for large wooden steamers being laid, and as this yard is never allowed to be altogether idle, the report is no doubt correct in the main. Other builders are figuring on new contracts, and as the presidential election has gone the way that most capitalists, employers of labor, etc., desired, we would not be surprised to see an early resumption of activity at most of the shipyards. Certainly, building to a greater or less extent had been intended in the event of a Republican victory in politics, now, such being the case, we look to see the promises made good and a general era of good business experienced in shipyards, engine building plants, boiler shops, dock and wharf construction and the other large industries connected with shipping and shipbuilding on the lakes.

IN our issue of Oct. 22 we called attention to the possibility of the new life-saving station at Port Huron being placed several miles from a position where it was likely to do the most good. We further pointed out to the superintendent of the district the advisability of looking closely into the matter, and if necessary, acquainting the officials sent on to select a site, of the most favorable position endorsed and recommended by those best acquainted in the locality. We now learn that it has been definitely decided to locate the new station north of Gratiot beach and about two and a half miles above the light-house. It will be on lots 1 and 2 of Kewahdin beach, which have been donated to the government for that purpose. The station will cost $15,000, and will be one of the finest and most perfectly equipped on the lakes. If two and a half miles up from the light is the best location we have nothing further to say, and will patiently await future developments. But it does appear to us that the nearer the light, or position, which all vessels make for in entering the river, is about where the station ought to have been placed, though perhaps our surmises are not quite correct in this direction; if not, we may learn later, and we purpose watching to learn.

A MARINE POSTOFFICE.

The Buffalo Enquirer thinks that a marine postoffice should be established at that port for the purpose of handling ship mail, and in support of its views has the following to say:

"There is a growing need in this port for a marine postoffice, some point where all the mail can be found that is intended for people sailing on the lakes. As the matter stands now the mail intended for them is addressed in a sort of a hap-hazard way to some broker's or tug office, or to any point where a captain or sailor may be supposed to stop while in port. The result is that a person needs to go the entire round of these places asking for mail.

Often, too, the letters are merely addressed to the person and the vessel to which he belongs; then all the carrier can do is to guess at the place most likely to catch the owner of the letter. So it often happens that mail does not reach its destination at all, but is left to accumulate at the tug and brokers' offices. Occasionally a bundle of them goes back to the postoffice. This mail sometimes arrives soon after the vessel has left. If the usual direction could be left at the marine postoffice it could be forwarded to the port for which the vessel has sailed and get there ahead of her. Detroit has a marine postoffice and an elaborate boat service in connection. Why should not Buffalo have one?"

All of which is very pertinent and it would greatly facilitate the business of the sailing community if such a departure could be brought about. We recognize, however, that it is no argument in stating that Detroit has such a service, for Detroit is regarded as a port of call, where vessels always expect to receive orders, the crew their mail and such other parcel or postal matters which can be properly handled.

If Buffalo was given special privileges other ports would justly acquire the same and the item of season expense would most likely debar action being taken by the Postmaster General. Perhaps a better way of accomplishing the desired result would be to have each local postmaster take sufficient interest in vessel mail to detail help so as to see that it reached the clerical hands of those to whom it was sent, instead of allowing it to go to the dead letter office without any special efforts being made to deliver it. We hope that from the Enquirer's article on this subject a more particular interest will be taken at all postoffices in connection with vessel mail and that an earnest effort will always be made in the future to reach the address in every case.

LOSS OF A LIGHT-SHIP'S CREW.

The crew of the light-ship on Eleven-foot Shoal, at Peninsula Point, Lake Michigan, two brothers named Peterson, were drowned on Saturday night, by their boat capsizing while trying to board the light-ship.

A RESULT OF THE ELECTION.

Confidence, which we presume is another word for work, is looking up again. A dispatch from West Superior states that the McDougall whalebacks 201 and 202, which were built on the Atlantic coast several years ago and brought to the lakes early in the season, have been placed in the dry-dock preparatory to being cut in two and lengthened 62 feet each. This work will give employment to several hundred men for two months or more. Following the lengthening of these vessels the American Steel Barge Co. will enter upon the construction of the largest whaleback steamer yet built, to be named the Alexander McDougall.

BRITISH SHIPBUILDING.

As an indication of the shipbuilding orders now being placed in British yards we take the following paragraphs from one of our foreign exchanges:

Swan & Hunter, Wallsend, have received an order from Sir Christopher Furness, of West Hartlepool, to build a cargo steamer of 12,100 tons. There is presently building at the same yard a steamer of about 11,400 tons deadweight capacity for Sir Christopher.

Thames Ironworks Co, London, have secured the contract to build a cruiser of about 4,000 tons for the Portuguese government. The firm are also to build two torpedo gunboats for the same government.

The Wilson & Furness-Leyland Line, Limited, and the Associated Lines have contracted with Messrs. Harland & Wolff, Belfast; Messrs. Alexander Stephen & Sons, Glasgow; and Messrs. Furness, Withy & Co., Hartlepool, for the construction of five steamers, each of 10,000 tons measurement and to steam 15 knots. The vessels are to be delivered within twelve months.

NOTICE TO MARINERS.

UNITED STATES OF AMERICA—NORTHERN LAKES AND RIVERS—OHIO.

CLEVELAND EAST PIER LIGHT STATION.—Notice is hereby given that, on or about November 4, 1896, the tower from which the fixed red light at this station is shown, on the outer end of the old east pier, Cleveland Harbor, will be moved to the new east pier. The tower will stand 31 feet from the outer end of the new pier, and 121 feet nearer the shore than formerly. The focal plane of the light will be 36½ feet above mean lake level, instead of 37 feet as heretofore.

ST. JOSEPH PIERHEAD RANGE LIGHT STATION.

ST. JOSEPH PIERHEAD (FRONT) LIGHT.—Notice is hereby given that, on or about November 16, 1896, the fixed red lantern light, shown from the outer end of the elevated conduit on the outer end of the north pier at the entrance to St. Joseph Harbor, east side of Lake Michigan, will be discontinued.

ST. JOSEPH PIERHEAD LIGHT.—On the same date the tower from which the fifth-order fixed red light is shown at this station, on the north pier, entrance to St. Joseph Harbor, east side of Lake Michigan, will be moved about 290 feet nearer the outer end of the pier and the light re-established therein as heretofore.

By order of the Light-House Board:

JOHN G. WALKER,
Rear Admiral, U. S. Navy, Chairman.

Office of the Light-House Board, Washington, D. C., November 4, 1896.

LIST OF PAPERS TO BE READ

AT THE FOURTH GENERAL MEETING OF THE SOCIETY OF NAVAL ARCHITECTS AND MARINE ENGINEERS.

THURSDAY, NOVEMBER 12, 1896.

1. Test of an Experimented Turret of the U. S. Battleship Massachusetts. By Commodore W. T. Sampson, U. S. N. Chief of Bureau of Ordnance, Navy Department, Washington, D. C.
2. Steel Canal Boats. By Lewis Nixon, manager Crescent Shipyard, Elizabeth, N. J.
3. Trial Performance of the Grand Duchess. By Somners N. Smith, manager Newport News Ship-Building and Dry-Dock Co., Newport News, Va.
4. Naval Practice in Ship Rivets and Riveting. By Naval Constructor J. H. Linnard, U. S. Navy.
5. American Fire-Boats. By H. DeB. Parsons, Marine Engineer.
6. Corn-Pith Cellulose. By Henry W. Cramp, Vice President Wm. Cramp & Sons, Philadelphia, Pa.

FRIDAY, NOVEMBER 13, 1896.

7. The New Battle-ships. By Chief Constructor Philip Hichborn, U. S. Navy.
8. Speed Trials of a Screw-Propelled Ferry-Boat. By F. L. DuBosque, Engineer Floating Equipment, Pennsylvania Railroad.
9. Hydraulic Sheers for Lifting One Hundred and Twenty-five Tons. By Frank B. King, Marine Engineer and Naval Architect.
10. A method of Calculating the Stability of Ships, adapted to the use of Standard Curves of Stability. By Hugo Hammar, Naval Architect.
11. Stability of a Ship in Damaged Condition. By James Swan, Massachusetts Institute of Technology.
12. Damaged Conditions as Affecting the Stability and Fighting Efficiency of Battleships, By Assistant Naval Constructor T. F. Rhum, U. S. Navy.
13. Screw Propellers. By Professor Geo. R. McDermott, Cornell University, Ithaca, N. Y.

WEEKLY FREIGHT REPORT.

The past week has been one of uncertainty in the freight market as there appeared to be a general holding off until the result of the election could be made known, and business has not yet quite settled down. Buffalo has received enormous quantities of grain, aggregating 15,000,000 bushels, in the past two weeks, or about a million bushels a day for the month. Rates on grain from Chicago are now quoted at 2⅜ cents on corn, though an attempt was made to break the rate to 2¼. Milwaukee shipped nearly half a million bushels this week at the following rates: Wheat, 2⅜; corn or rye, 2¼; barley, 2⅛. Oats, 1⅞ cents to Buffalo, barley to Oswego, 3¾ cents. A raise of ⅛ cent on barley has been got since. From Detroit 1¾ cents was paid on wheat.

Ore cargoes are very quiet at the nominal rates of 75 and 85 cents, and while there is considerable being carried, yet it is chiefly by the line and season charter boats. Coal shows a firmer feeling at the 5-cent raise to the head of the lakes, and 30 cents is now considered the going rate. It is a noteworthy feature, this week, that a whaleback tow-barge and her consorts moved 11,200 tons from Lake Erie to Duluth. This amount is the largest ever carried in one tow on the lakes. The anthracite coal rates from Buffalo have ruled at 20 cents; Duluth, 25 cents; Toledo, 30 cents; Chicago and Milwaukee, 40 cents; Green Bay, with but light chartering being done. Erie canal rates were fairly steady at 3¾ cents on wheat, 3½ cents on corn, 2⅜ cents on oats, 3⅛ cents on barley, 3½ cents on rye, and 3¾ cents on flax-seed to New York. Lumber rates, $2 to New York and $1.50 to Albany.

MILWAUKEE'S COAL HANDLING FACILITIES.

There are few, if any ports on the lakes, that can handle coal in the way of discharging, faster than Milwaukee can; and as she is a receiving, as differing from a shipping port, Milwaukee dealers are to be congratulated on the facilities offered. As an evidence of what Milwaukee can do in discharging coal cargoes, we may mention the record made a day or two ago. The steamer Fred Pabst began the discharge of 2,800 tons of coal at Uhrig & Son's dock, at 8 a. m., and at 9 p. m., was ready to leave for Chicago. The Omaha, with 1,500 tons, commenced discharging at noon, and at 10:30 p. m. began loading a cargo of grain, leaving port loaded at 4 p. m., thus handling two full cargoes in twenty-eight hours.

WILLIAM SCHADE for many years a vessel master out of Chicago, which was his former home, died in Manitowoc, last week. He was well known on the upper lakes.

SCOTT'S NEW 1896 COAST PILOT

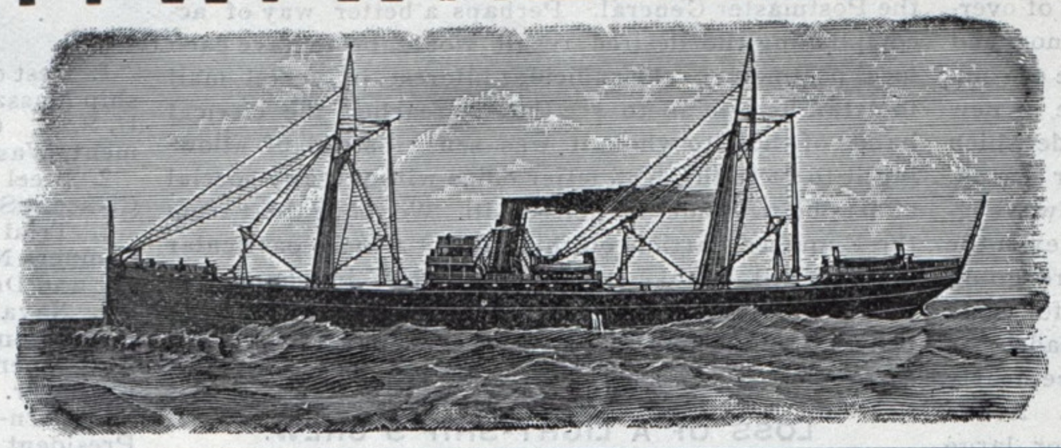
FOR THE LAKES
PRICE $1.50.

FOR SALE BY

THE MARINE RECORD,

WESTERN RESERVE BLDG., CLEVELAND.

F. W. WHEELER & COMPANY,



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INCORPORATED 1794

Insurance Company of North America.

CAPITAL, PAID UP IN CASH, - - $3,000,000.00
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Insures against Marine and Inland Transportation Risks and Issues Policies making Loss Payable in England.

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The profits of the Company revert to the assured, and are divided annually upon the premiums terminated during the year; thereby reducing the cost of insurance. For such dividends, certificates are issued bearing interest until ordered to be redeemed, in accordance with the charter.

J. D. JONES, Pres. W. H. H. MOORE, Vice Pres. A. A. RAVEN, 2d Vice Pres. J. H. CHAPMAN, Sec.

ON THE STABILITY OF SHIPS.*

One of the primary conditions of safety that the designer of a ship requires to satisfy is that of stability. A ship floating in still water is in the condition, as regards stability, of a solid body whose base is a curved surface, resting upon a plane. Such a body will be in equilibrium when its centre of gravity is vertically over the point of support. The equilibrium will be stable if after a small angular displacement from the position of rest the vertical through the point of support pass outside the center of gravity of the body; and it will be unstable if after such displacement it pass inside of it. If the vertical through the point of support pass through the centre of gravity of the body after it had been rotated from the position of rest, the equilibrium is neutral, and the body will remain indifferently in any position in which it may be placed while this condition is fulfilled. This would be the case of a body with a spherical or a cylindrical base, whose center of gravity coincides with the centre of curvature of the base. The stability of a ship in still water would thus be tested by inclining upon a level plane a solid which has the same curvature as the surface of centres of buoyancy. If a sectional model be made to scale, the lengths of the righting levers, or the horizontal distance of the centre of gravity from the vertical through the point of support can be graphically determined; and this distance, which is the inclining lever, tending to right the vessel when it passes outside the centre of gravity and to overturn her when it passes inside, multiplied by the total weight of the vessel, gives what is called the amount of stability for the angle at which the length of the lever is measured. By measuring the lengths of the righting levers at successive angles of inclination—say, 10, 20 and 30 degrees, etc.—and setting these up as ordinates of a curve, the abscissa line of which is divided to represent the corresponding angles of inclination, we obtain what is known as a curve of stability. This curve shows how long the righting moment goes on, increasing with the angle of inclination, when it reaches a maximum, and when it finally vanishes and becomes changed into an upsetting moment. The builder does not require to calculate the exact curve of centres of buoyancy, and to follow out in his practical working the analogy between that curve and the curved base of a solid resting upon a solid plane. All that is necessary for him is to calculate the positions of the verticals through the centres of buoyancy at successive angles of inclination. This gives the lengths of the rightful levers, and enables the curve of stability to be constructed.

The principal factor in determining a ship's stability is the distance between the metacentre and her centre of gravity. The position of the metacentre can be determined by an easy calculation; but it is necessary to estimate accurately the position of the centre of gravity of a ship and contents in order to know what stability she will have. The distance of the centre of gravity below the metacentre requires to be different in ships of different type, according as the curve of stability is large or small for the same metacentre height. In some ships, such as high-sided passenger liners, one foot is ample, because the righting levers go on increasing up to a large angle in this type of ships; but in some vessels, such as warships with low freeboards, and heavy weights high up on the sides and deck, three feet and more would be required. It is desirable to give a vessel only the metacentre height that is sufficient for safety and no more, because the less she has, consistent with safety, the easier she is at sea, and the less will she roll under the influence of waves. The exact distance between the metacentre and center of gravity that is best for any given ship thus depends upon the type of ship and the vertical distribution of her weights. A shipbuilder's calculations had to be made from the most unfavorable conditions of loading likely to obtain.

Continuing, Dr. Elgar said: The third of the primary conditions of safety that a ship constructor has to satisfy is that of structural strength. It is, unfortunately, impossible in the present state of our knowledge of the subject to determine by theory or calculation the exact sizes requisite for the various component parts of the hull; so that empirical rules based upon experience with other vessels and the trained mechanical judgment of the constructor have to be chiefly looked to in the matter. Science has done much in determining the nature of the straining actions set up in a ship afloat, and the laws which regulate them; but it is impossible at present to calculate quantitatively their whole or exact effect upon a ship, and the maximum stresses to which the main portions of the structure will be subjected. The most important problem in practice is that of the stresses to which the various parts of a ship's hull are subjected when she is crossing waves of about her own length, and is being bent alternately in two opposite directions. The most complete calculations yet made of longitudinal straining action among waves—valvable as these are as steps towards an exact solution of the problem and as a guide to the skilled judgment of the constructor—fail in quantitative accuracy, owing to the omission of important dynamical and other considerations that have till now defied exact mathematical treatment. The calculations of the transverse and other strains of ships among waves fail still more in quantitative value, and it is not yet possible to approximate them with any reasonable degree of accuracy. The sizes of the steel plates and angles required for the hull of a ship of given dimensions are at present regulated by empirical rules, or by the judgment of the constructor. These are corrected from time to time by the results of experience. The data and scientific knowledge requisite for the purpose are steadily accumulating, and may, it is hoped, be sufficient before long to furnish a surer guide to the judgment and a sounder basis of calculation than at present.

*A paper read by Dr. Francis Elgar, F. R. S., M. Inst. C. E., before the British Association, in the Philharmonic Hall, Liverpool, September 18, 1896.

FIGURING AHEAD.

The competition which the Grummond line has given the Detroit & Cleveland Steam Navigation Co. this season, appears to have convinced the latter company that the service between Detroit and Cleveland must be increased next season to hold the business. At a meeting of the stockholders of the Detroit and Cleveland Co. held in Detroit a few days ago, it was decided to inaugurate a double daily service between the two cities next season, and in any event to reduce the price of transportation. It was also settled that in case there was competition, that the D. & C. line would meet any rate offered, and would make a bid for the business equal, if not below that of any competing line.

The officials of the D. & C. line recognize the fact that the Grummond Co. has negotiated for a Chicago boat to be put on the line, and they decided that they would drive the opposition from the field by low rates and a quick service. As soon as business will warrant next season, the D. & C. Co. will put on a boat leaving each city at 9 o'clock in the morning, and another departing at 11 o'clock in the evening. They also decided that whether they had opposition or not, the rates of fare and freight charges between the two destinations would be reduced, as would also the price of berths for the season of 1897.

WRECKS AND STRANDINGS.

The gale of October 30-31 caused several strandings, but the loss of the schooner S. P. Ely at Two Harbors, Lake Superior, was the most serious casualtv of the blow. The Ely was built at Detroit in 1869, tonnage, 596, and had an insurance valuation of $10,000, rated A2, one-fifth owned by Harvey H. Brown was insured, and the Bradley estate loses the remainder of her value.

The steamer Allegheny and consort Transfer went ashore alongside the schooner Mattie C. Bell on Big Summer Island, both were light-bound from Chicago to Manistique. The Allegheny is owned in Tonawanda by Charles Weston, 401 tons, built in 1856 and valued at $15,000. On the same date the steamer Oceanica grounded during a thick fog at Mackinac Point, but afterwards released herself without assistance, and proceeded.

The steamer Escanaba grounded at the Detroit and Milwaukee R. R. Co.'s bridge at Grand Haven, and remained there long enough to seriously impair traffic before being lightered.

The schooner Penobscot, ashore near Port Maitland, was released after jettisoning cargo, and towed to Buffalo for final repairs.

The steamer Josephine lost her consort, the Frank W. Gifford, on Lake Superior, through the tow line parting in the gale. Great anxiety was felt for the safety of the schooner, and tugs were dispatched to search for her. She, however, turned up all well.

The schooner Casey became water-logged at Nipigon Bay, and assistance was sent to her.

The large steel schooner Marcia, in tow of the Matoa, parted her steel tow line off Keweenaw Point, Lake Superior, during the blow, and falling off in the trough of the sea, disabled her rudder, besides doing other damage. She was finally picked up again by her convoy, and towed to Marquette where repairs were made.

RESIDENCE FOR VOTING PURPOSES.

The question has been asked whether seamen, whose vessels may be lying at different ports in the country on an election day, are entitled to vote there. They certainly are not. Section 5 of Article VII of the constitution as amended says:

No elector shall be deemed to have gained or lost a residence by reason of his being employed in the service of the United States, or of this state, nor while engaged in the navigation of the waters of this state, or of the United States, or of the high seas, etc., etc.

If a seaman reached his home on the morning of election he would not lose his vote on account of not having resided in the township for twenty days, but on the other hand the law distinctly says he cannot gain a residence in the port where he may be on the day of election.

PROPOSALS.

U. S. ENGINEER OFFICE, 366 Milwaukee street, Milwaukee, Wis., Oct. 27, 1896. Sealed proposals for: Kewaunee Harbor, Wis., 425 feet pile pier extension; Manitowoc Harbor, Wis., 500 feet crib pier extension; South Milwaukee Harbor, Wis., 180 feet pile pier extension; Racine Harbor, Wis., 250 feet crib pier extension; Kenosha Harbor, Wis., 250 feet crib pier extension; will be received here until 12 o'clock noon November 27, 1896, and then publicly opened. Information furnished on application, GEORGE A. ZINN, Capt. Engrs. 45-47

WANTED.

WANTED.

Tug suitable for fishing purposes, about 80 feet long and 14 feet beam, with power suitable for purpose mentioned. Desire boat built within past six years. Price must be reasonable. Address W. B., care of MARINE RECORD.

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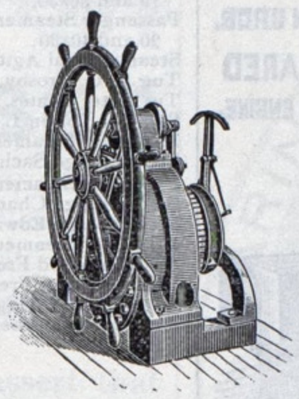

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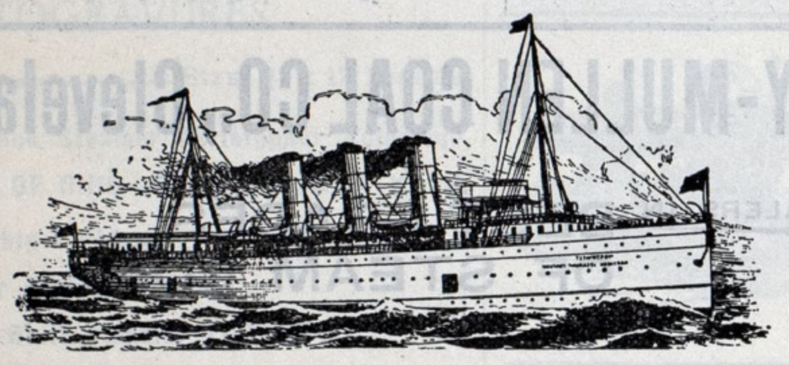

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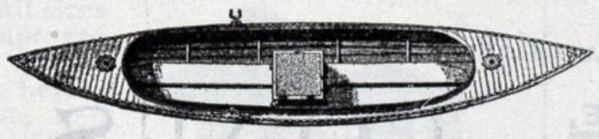

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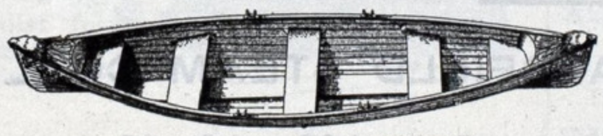

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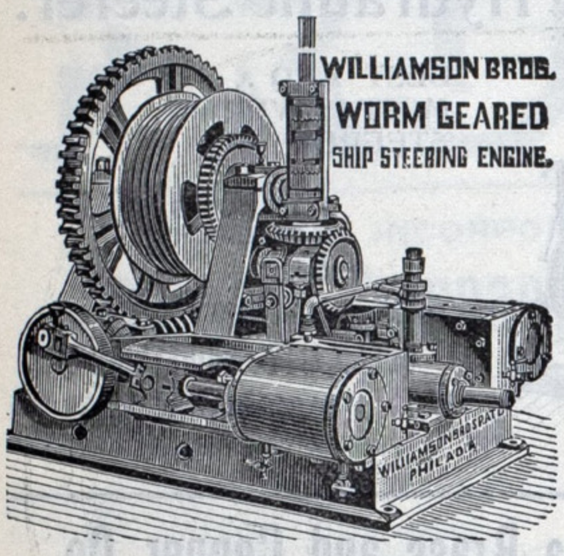

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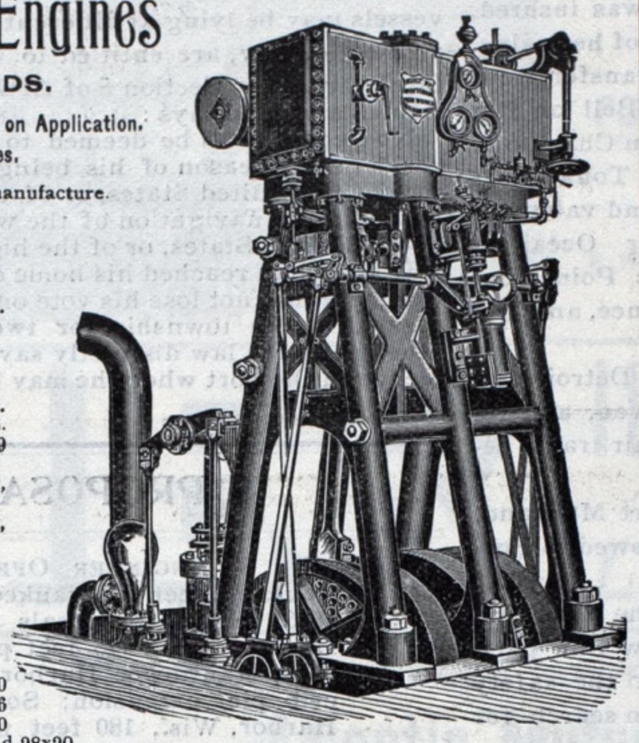

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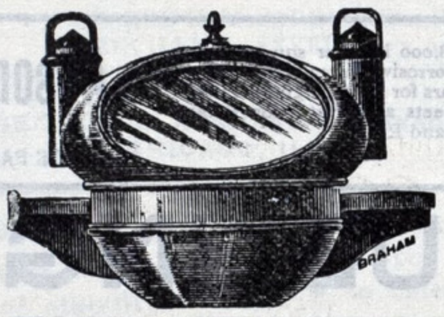

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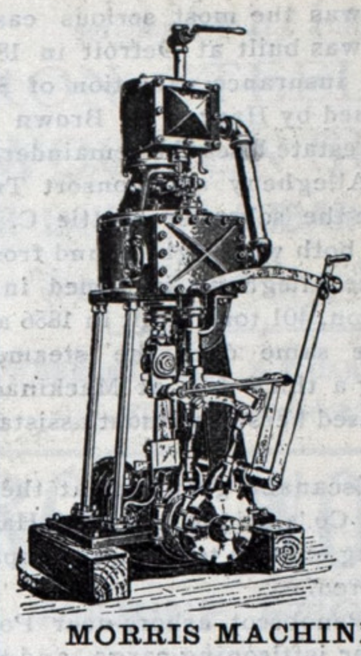

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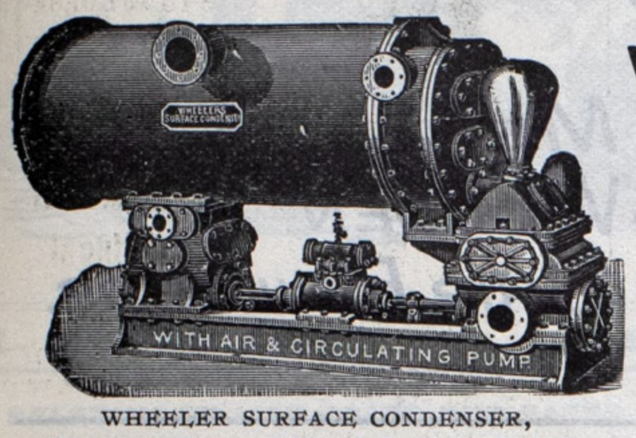

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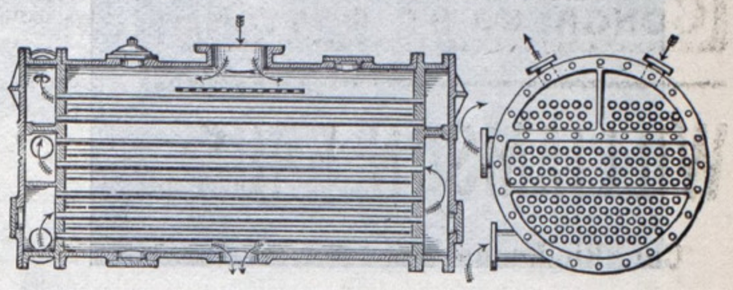

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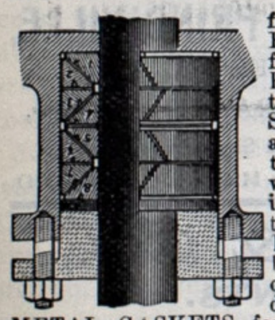

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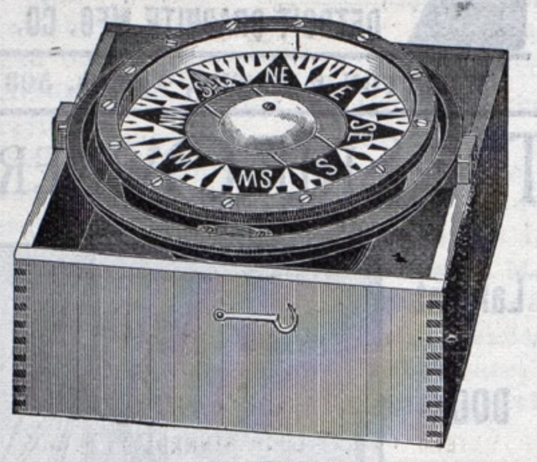

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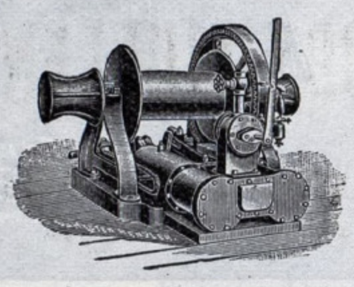

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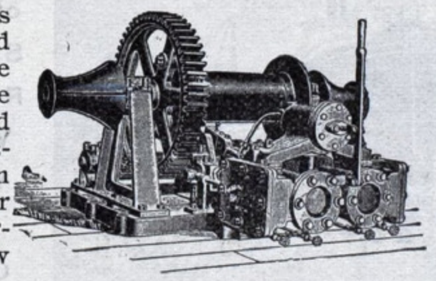

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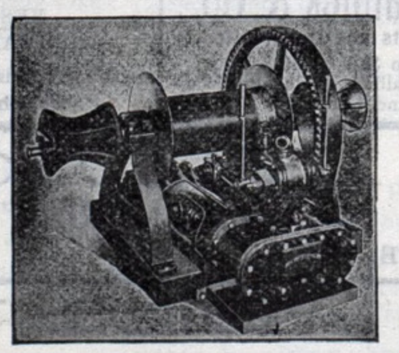

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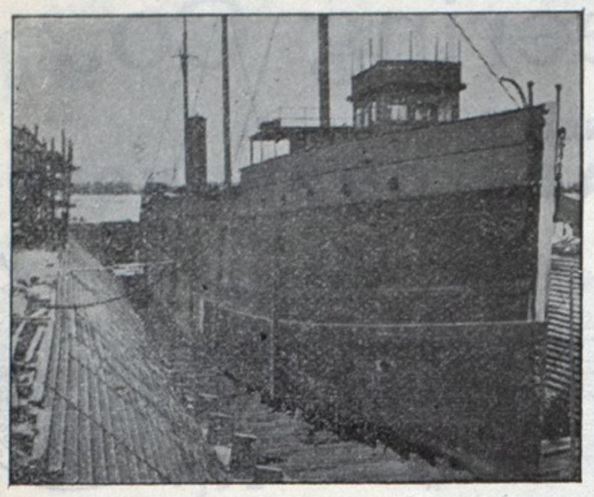

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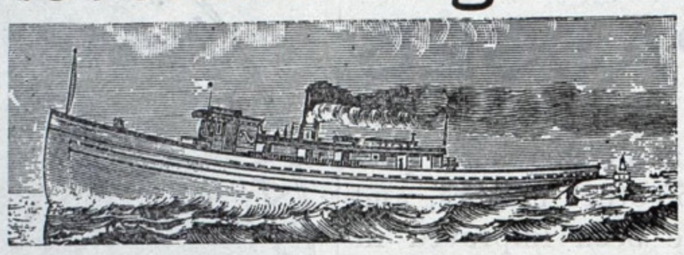

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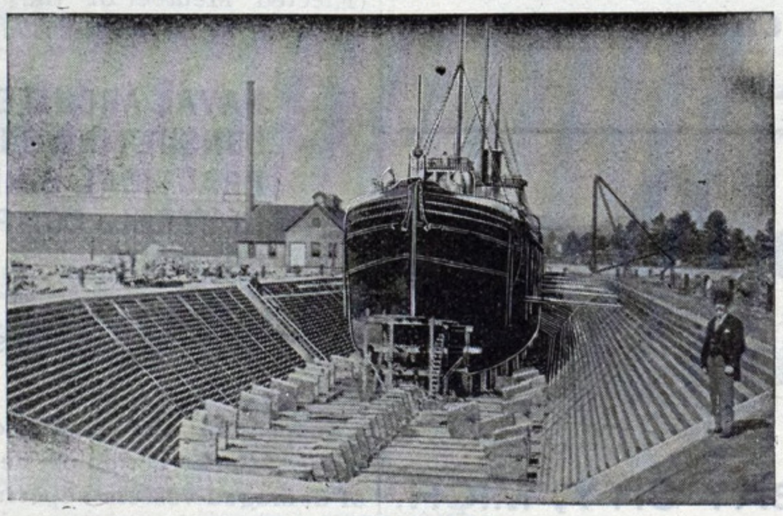

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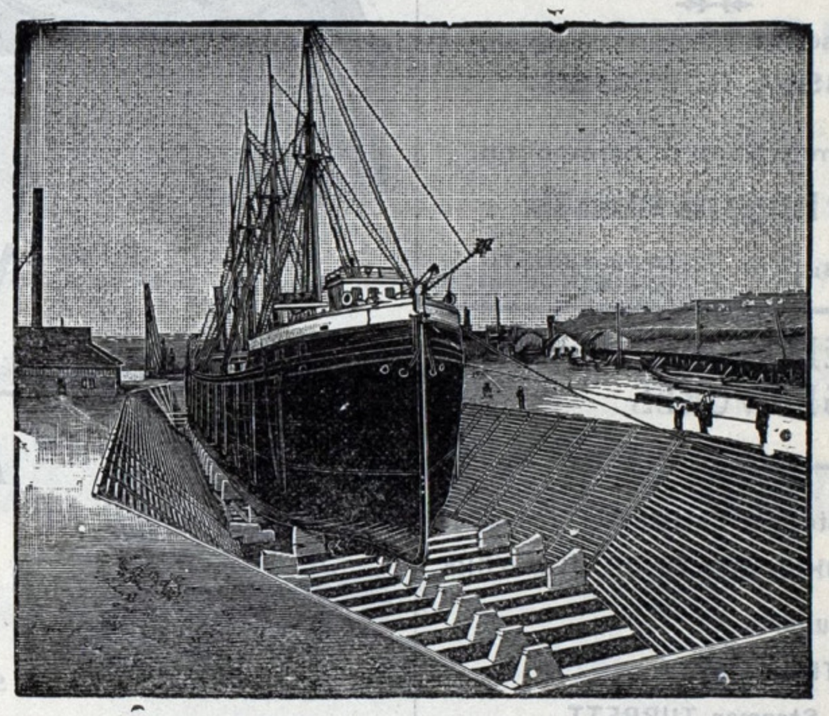

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